Appendix to Resolution No. 227
of the Senate of the University of Silesia of 25th January 2022

Curriculum at the International Environmental Doctoral School associated with the Centre for Polar Studies at the University of Silesia in Katowice from the academic year 2022/2023

1. Education at the International Environmental Doctoral School associated with the Centre for Polar Studies at the University of Silesia in Katowice (hereinafter referred to as IEDS) is conducted jointly by the University of Silesia in Katowice (US), the Institute of Geophysics of the Polish Academy of Sciences (IG PAS), the Institute of Mathematics of the Polish Academy of Sciences (IM PAS) and the Institute of Oceanology of the Polish Academy of Sciences (IO PAS).
2. Education at IEDS is conducted in the following disciplines: mathematics and Earth and related environmental sciences (in the field of natural sciences) and materials engineering (in the field of engineering and technology).
3. Education at the Doctoral School takes place on the basis of the education programme (curriculum) and the individual research plan presented by the doctoral student within 12 months from the beginning of education at the Doctoral School.
4. Before completing education at the Doctoral School, the doctoral student is obliged to present a certificate or a diploma of graduation, confirming knowledge of a modern foreign language at the level of at least B2, in accordance with Article 186 (1) (2) of the Act of 20th July 2018 — Law on Higher Education and Science.
5. Basic assumptions of the curriculum:
    1) education in IEDS lasts 4 years, i.e. 8 semesters. Settlement of classes takes place on an annual basis;
    2) the programme includes compulsory modules (including elective modules) and a modern language, as a non-compulsory module. The mandatory modules consist of the following components:
        a) general *modules (Editing scientific texts and the publication process, Databases in scientific research, Intellectual property law and ethics of scientific research, Practical aspects of obtaining funds for scientific research and management of research projects, Scientific and professional career planing*) implemented by all doctoral students in the first two years of education. They are designed to provide the necessary knowledge, skills and tools allowing for efficient functioning in the scientific community,
        b) directional modules, providing specialist education in a selected teaching path consistent with the scientific profile of doctoral students,

c) interdisciplinary elective classes, providing doctoral students with an interdisciplinary context of scientific research implemented in the form of elective modules,
d) presentation of research results – modules shaping skills in the field of self-presentation and academic discussion,
e) seminars – the basic module leading to the preparation of a doctoral dissertation,
f) professional internships shaping competences in the field of teaching, in particular at the academic level and promotion of the results of scientific research in society,
g) (foreign) specialized courses, introducing the obligatory aspect of internationalization of education and research in the form of individualized courses carried out in prestigious foreign centres;

3) classes are grouped in thematic blocks (not applicable to seminars, internships, modern language and foreign courses) and are carried out in facilities belonging to partner entities co-running IEDS or in the field;
4) lecturers affiliated to entities conducting jointly IEDS are the coordinators of the modules;
5) education is conducted in Polish or English. Modules are delivered in Polish when the lecturer and all participants of the classes declare that they speak Polish. If the lecturer or one of the students declares that they do not speak Polish, classes are conducted in English;
6) in the evaluation of learning outcomes, the following are used: CREDIT (CREDIT) for a positive grade, NO CREDIT (FAIL) for a negative grade. If it is necessary to confirm the achieved learning outcomes expressed on a scale from 2.0 to 5.0, for the needs of external entities, the doctoral student receives 5.0 for the module passed, and 2.0 for the failed module;
7) the doctoral student may take additional courses as part of modules organized by IEDS or modules in other entities educating doctoral students with the consent of the Dean of IEDS, for which the doctoral student receives ECTS credit points;
8) teaching classes and verification of achieving learning outcomes can be carried out in the contact mode, remotely using electronic means of communication (in synchronous or asynchronous mode) or in a hybrid mode, combining contact classes with classes with electronic communication support;
9) the education programme has been in force since the academic year 2022/2023.

Framework curriculum

YEAR I

Module	**Entities coordinating the module**	**Form of classes**	**Form of verification of learning outcomes**	**Numbe r of hours**	**ECTS**
Editing scientific texts and the publication process	US	Workshop	Credit	20	2
Databases in scientific research	US	Workshop	Credit	16	2
Intellectual property law and research ethics	US	Tutorial	Credit	15	1
Directional module I: Critical synthesis of contemporary scientific achievements	US, IO PAD, IG PAS, IM PAS	Workshop	Credit	16	2
Interdisciplinary elective classes I	US, IO PAS, IG PAS, IM PAS	According to the module description	Credit	16	2
Presentation of research results I	IO PAS	Workshop	Credit	10	1
Seminar I	US, IO PAS, IG PAS, IM PAS	Seminar	Credit	40	4
Professional internships I	US, IO PAS, IG PAS, IM PAS	Internships	Credit	30-60	4
Modern language[1]	US	Foreign language course	Credit	10-60	1-4
Total				**171-201**	**18**

[1] optional classes, English organized by IEDS or another modern language as part of certified courses, for which ECTS credit points (1-4) will be awarded. The module may also include passing a Polish language course for foreigners.

YEAR II

Module	**Entities coordinating the module**	**Form of classes**	**Form of verification of learning outcomes**	**Number of hours**	**ECTS**
Practical aspects of obtaining funds for scientific research and management of research projects	US	Workshop	Credit	16	2
Scientific and professional career planning	US	Tutorial	Credit	10	1

Directional module II: Methodological workshop	US, IO PAS, IG PAS, IM PAS	Workshop	Credit	16	2
Interdisciplinary elective classes II	US, IO PAS, IG PAS, IM PAS	According to the module description	Credit	16	2
Presentation of research results II	IG PAS	Workshop	Credit	10	1
Seminar II	US, IO PAS, IG PAS, IM PAS	Seminar	Credit	40	4
Professional internships II	US, IO PAS, IG PAS, IM PAS	Internships	Credit	30-60	4
Modern language[2]	US	Foreign language course	Credit	10-60	1-4
Total				**138-168**	**16**

[2] optional classes, English organized by IEDS or another modern language as part of certified courses, for which ECTS credit points (1-4) will be awarded. The module may also include passing a Polish language course for foreigners.

YEAR III

Module	**Entities coordinating the module**	**Form of classes**	**Form of verification of learning outcomes**	**Number of hours**	**ECTS**
Directional module III: Current research challenges	University of Silesia, IO PAN, IGF PAN, IM PAN	Workshop	Credit	16	2
Interdisciplinary elective classes III	University of Silesia, IO PAN, IGF PAN, IM PAN	According to the module description	Credit	16	2
Presentation of research results III	IM PAN	Workshop	Credit	10	1
Seminar III	University of Silesia, IO PAN, IGF PAN, IM PAN	Seminar	Credit	40	4
Professional internships III	University of Silesia, IO PAN, IGF PAN, IM PAN	Internships	Credit	30-60	4
Total				**112-142**	**13**

YEAR IV

Module	Entities coordinating the module	Form of classes	Form of verification of learning outcomes	Number of hours	ECTS
Presentation of research results IV	IO PAS	Workshop	Credit	10	1
Seminar IV	US, IO PAS, IG PAS, IM PAS	Seminar	Credit	40	4
Professional internships IV	US, IO PAS, IG PAS, IM PAS	Internships	Credit	30-60	4
Total				**80-110**	**9**

YEARS I - IV

Module	Entities coordinating the module	Form of classes	Form of verification of learning outcomes	Number of hours	ECTS
(specialized) foreign courses	US, IO PAS, IG PAS, IM PAS	According to the terms of the course	According to the terms of the course	At least 75 throughout the education cycle	5
Total				At least 75 throughout the education cycle	**5**

Total compulsory classes: 561 – 606 h/ 61 ECTS

Module description:

Module	Description	Learning outcomes [3]	Comments
MANDATORY MODULES			
Editing scientific texts and the publication process	The module provides knowledge and skills in the development of scientific texts in accordance with applicable standards. Classes include workshops on the preparation of a manuscript of scientific work, taking into account the requirements of the editors of scientific journals. As part of the module, skills in using literature databases and	P8S_UK P8S_KO P8S_KR	Modules implemented by all doctoral students

	creating references are developed. Doctoral students will become familiar with the criteria for reviewing articles and good practices in responding to reviews.		
Databases in scientific research	The module provides knowledge and skills in the use of factual databases, their structure and access rules. Doctoral students are acquainted with the methods of data preparation and management in accordance with the FAIR data guidelines, acquire the skills to create a data management plan (DMP) for their own research and project applications.	P8S_WG P8S_UW P8S_KR	
Intellectual property law and research ethics	The module provides knowledge and skills in its application in the field of intellectual property law in relation to conducting scientific research and announcing its results in a manner consistent with the applicable regulations of generally applicable law and binding ethical standards. The doctoral student is acquainted with legal and ethical regulations and good practices in the field of management and use of the so-called intellectual property subjects arising in the course of conducting scientific research.	P8S_WK P8S_KR	
Practical aspects of obtaining funds for scientific research and management of research projects	The module presents the principles of effective preparation of scientific projects, develops the ability to build a project team and assign roles in it, define the function of the project manager and good practices in project management, starting from the creation of the application to the settlement of the project.	P8S_UO P8S_UU P8S_KR	

	Doctoral students gain knowledge about current mechanisms of financing scientific research and acquire skills in writing project applications to selected entities financing science.		
Scientific and professional career planning	The module prepares the doctoral student to work in entities of science and higher education in Poland and abroad. During the coursework, doctoral students gain knowledge and skills regarding the planning of a scientific career and activities increasing success on the labour market in the sector of science, higher education, research and development. Available internship and scholarship programs in renowned academic and research centres are discussed. The module covers the formation of teamwork skills.	P8S_UK P8S_UO P8S_UU	
Directional module I: Critical synthesis of contemporary scientific achievements	The module provides extended knowledge for the discipline in which the doctoral dissertation is prepared.	P8S_WG P8S_UW	•Modules implemented separately for the following specialization groups, according to the affiliation of the doctoral student (coordinating entity in brackets): – Mathematics (IM PAS) – Materials Engineering (Faculty of Science and Technology US) – Earth and related environmental sciences – Geophysics (IG PAS) – Earth and related environmental Sciences – Oceanology (IO PAS) – Earth and related environmental Sciences – Natural Environment (Faculty of Natural Sciences US) •On the doctoral student's application, which is assessed by the supervisor, the dean of
Directional module II: Methodological workshop	The module shapes skills in specialist research methods, advanced techniques, tools and applications applied in Earth and related Environmental Sciences, Mathematics and Materials Engineering.	P8S_UW P8S_KK	
Directional module III: Current research challenges	The module provides knowledge and skills in the field of research challenges in the discipline in which the doctoral dissertation is prepared, taking into account the latest scientific achievements and social needs.	P8S_WG P8S_UW P8S_KK	

			IEDS may give permission to take a course intended for doctoral students, carried out by an external entity, for which at least 2 ECTS will be awarded. • The doctoral student may take more courses within the Directional Module, intended for other specialties, for which the doctoral student will be awarded additional ECTS credit points.
Interdisciplinary elective class I-III	A series of modules presenting current research problems in Earth and related Environmental Sciences, Mathematics and Materials Engineering presented in an interdisciplinary approach. Doctoral students become familiar with methods, tools and research results in connection with related research disciplines, which allows them to shape the transfer of knowledge and skills between disciplines and find cognitive niches at the point of contact of various scientific disciplines.	P8S_WG P8S_WK P8S_UW P8S_KK	Before the beginning of the academic year, each entity conducting jointly IEDS submits a minimum of 3 course proposals with descriptions and an indication of the discipline to which they relate to the IEDS Council for approval. • Doctoral students choose from courses approved by the IEDS Council. • From the first to the third year of education, doctoral students complete a total of not less than 3 courses (at least 1 course per year), with at least 2 of them in a discipline other than the one in which the doctoral thesis is prepared. • On the doctoral student's application, which is assessed by the supervisor, the dean of IEDS may grant permission to take a course intended for doctoral students, which carried out by an external entity, for which at least 2 ECTS credit points will be awarded. • The doctoral student may take more courses within the framework of interdisciplinary elective classes, for which additional ECTS credit points will be awarded.

Presentation of research results I-IV	The module shapes the skills of presenting research achievements on a scientific forum, including the presentation of theses, results and conclusions. Doctoral students learn and apply in practice the appropriate structure of presentation and are guided by the principles and good practices regarding presentation and scientific discussion; learn and improve various forms of scientific presentation, the ability to argue and defend their views. Doctoral students acquire the skills to conduct academic discussion and express an opinion on the content of the presentation. The module also allows for annual monitoring of the progress of doctoral projects.	P8S_WG P8S_UK P8S_KK	• The coordinator of the module is the Dean of IEDS or a person designated by him/her. • The module is organized jointly for all doctoral students of IEDS on the same date. • Doctoral students present the results of their research in the form of presentations (multimedia presentation, poster, etc.) and conduct an academic discussion in English. • The module is attended by supervisors and experts. • For doctoral students of the second year, the module can be credited via a presentation at a seminar organized as part of the mid-term evaluation. • On the doctoral student's application, which is assessed by the supervisor, the Dean of IEDS may grant permission to pass the module on the basis of a presentation report and active participation in a scientific discussion during an open scientific seminar with the participation of experts in the discipline in which the doctoral dissertation is carried out. The report is confirmed by the signature of the seminar organizer or session leader, as well as the supervisor.
Seminar I-IV	The module includes a complex of activities aimed at providing the doctoral student with the knowledge and skills to prepare and submit a doctoral dissertation. During the seminars, formal and substantive issues related to the preparation of the doctoral thesis are discussed and the progress of the doctoral thesis is monitored	P8S_WG P8S_UW P8S_UU P8S_KR	The seminar is coordinated by the supervisor or the coordinator of the doctoral seminar indicated by the Dean.

	on an ongoing basis. As part of the seminars, consultations with experts take place, participation in formal or informal research teams, group and individual classes with the seminar coordinator or supervisor, participation in additional classes and courses indicated by the supervisor.		
Professional internships I-IV	The module prepares the doctoral student to conduct teaching classes at the academic level, promote scientific results in society and shape pro-environmental attitudes. During the module, the doctoral student acquires teaching skills through participation in academic classes conducted by experienced academics, through observation and assistance in conducting classes. These skills are used in the course of conducting individually assigned classes. The doctoral student also uses the acquired skills in other teaching and popularizing activities, taking part in or conducting classes during workshops, seminars and participating in other activities related to the transfer of knowledge to various groups of recipients.	P8S_WK P8S_UW P8S_UK P8S_UU P8S_KO	• Carried out by conducting or participating in conducting academic classes in the number of at least 30 hours of teaching per year (but not more than 60 hours of teaching) or if the specificity of the activity of the entity jointly running IEDS, to which the doctoral student is affiliated, does not allow it, in the form of other documented teaching or popularizing activity (preparation and conducting classes, workshops, seminars; participation in science festivals and others) - 60 hours per year. • The University of Silesia in Katowice, at the request of doctoral students affiliated to other entities jointly conducting IEDS organizes professional internships in the form of conducting or participating in teaching classes at the University of Silesia in Katowice. • A doctoral student in the first year of education who has internships in the form of academic teaching by conducting 30 hours of classes (observation, assistance, preparation of materials and supervision over the course of classes and others). • A doctoral student of the second, third and fourth year

			who has internships in the form of academic teaching has them independently by conducting at least 15 hours of classes per year and participating in conducting at least 15 hours of classes per year. •The coordinator of the doctoral student's internship is the supervisor or auxiliary supervisor affiliated to the same entity, or a person appointed by IEDS.
(Specialized) foreign courses	The module provides specialist knowledge and skills through participation in classes carried out in renowned foreign scientific and research centres. Classes are profiled in terms of the doctoral student's needs in the scope of their doctoral thesis. As part of the module, doctoral students acquire competences in the work in international teams and get acquainted with the latest methods and techniques used in scientific research.	P8S_WG P8S_UW P8S_UK	•Courses are implemented in a direct, hybrid or remote form in foreign scientific-research or research and development units. •The module includes courses designed for doctoral students, or other highly specialized courses with the permission of the Dean. •Courses can be carried out throughout the entire period of education at the Doctoral School (years I-IV). •Courses can be implemented in the form of one or more activities, for which the doctoral student receives from the units implementing them not less than 5 ECTS credit points in total. •The doctoral student is responsible for the selection, application and implementation of the course in consultation with the supervisor. •Before the course, the doctoral student submits an application assessed by the supervisor for approval by the Dean.

OPTIONAL MODULE			
Modern language	A non-compulsory module shaping skills in the use of a modern foreign language primarily in academic communication.	P8S_UK	• English classes are organized by IEDS in a direct, remote or hybrid form. • ECTS credit points (1-4) are awarded for passing classes in a modern language carried out in entities jointly conducting IEDS as part of certified courses. • The module may also include passing a Polish language course for foreigners.

[3] code of the description component in the characteristics of the 8th level of the Polish Qualifications Framework according to the Regulation of the Minister of Science and Higher Education of 14th November 2018 on the characteristics of the second level of learning for qualifications at levels 6-8 of the Polish Qualifications Framework (Journal of Laws of 2018, item 2218).